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3M INNOVATIVE PROPERTIES COMPANY
PO BOX 33427
ST. PAUL, MN 55133-3427

EXAMINER	
MIDKIFF, ANASTASIA	

ART UNIT	PAPER NUMBER
2882	

DATE MAILED: 05/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/726,995	OUDERKIRK ET AL.	
	Examiner	Art Unit	
	Anastasia Midkiff	2882	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 February 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-11 and 13-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11 and 13-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *03 January 2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-19 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 2, 3, 4, 8, 9, 10, 11,12, and 13 of copending Application No. 10/726968 (hereinafter '968). Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims of the instant application are broader than the claims of application '968 and therefore are anticipated thereby. For example:

- Claim 1 of the instant application is anticipated by claim 1 of '968.
- Claim 2 of the instant application directly corresponds to claim 2 of '968.
- Claim 3: It is well within ordinary skill in the art for an adhesive to contain phosphor material in order to deposit the material in layer form.
- Claim 4 of the instant application directly corresponds to claim 3 of '968.

- The remaining claims directly correspond to each other and will not further be individually specified.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claims 1-26 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-33 of copending Application No. 10/727,026 (hereinafter '026). Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims of the instant application are broader than the claims of application '026 and therefore are anticipated thereby. For example:

- Claims 1 and 20 are anticipated by claims 1 and 18 of '026.
- Claim 2 directly corresponds to claim 2 of '026.
- Claim 3: It is well within ordinary skill in the art for an adhesive to contain phosphor material in order to deposit the material in layer form.
- Claim 4 directly corresponds to claim 3 of '026.
- The remaining claims directly correspond to each other and will not further be individually specified.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claims 1-19 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-9 of copending Application No. 10/727,072 (hereinafter '072). Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims of the instant application are broader than the claims of application '072 and therefore are anticipated thereby. For example:

- Claim 1 of the instant application is anticipated by claim 1 of '072.
- Claim 2 of the instant application directly corresponds to claim 2 of '072.
- Claim 3: It is well within ordinary skill in the art for an adhesive to contain phosphor material in order to deposit the material in layer form.
- Claim 4 of the instant application directly corresponds to claim 3 of '072.
- The remaining claims directly correspond to each other and will not further be individually specified.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 2, 5, 6, 8-11 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller et al. (US Patent 6,155,699; hereinafter Miller) in view of Fleming et al. (US Patent 6,172,810; hereinafter Fleming), and in further view of Schrenk (US Patent 5,540,978).

With respect to claims 1 and 8: Miller discloses, in figures 2 and 3 and throughout the disclosure, a light source comprising: an LED (12) that emits excitation light; a first multilayer reflector (32,34) that reflects at least a portion of visible light and transmits the excitation light (column 6, lines 17-18; column 6, line 42); and a layer of phosphor material (36) adjacent the multilayer reflector, the phosphor material emitting visible light when illuminated with excitation light. Miller further discloses the multilayer reflector to be a DBR mirror comprised of alternating layers of TiO_2 and SiO_2.

However, Miller fails to teach or fairly suggest the multilayer reflector being flexible, and that the polymeric material resists degradation when exposed to blue, violet or ultraviolet light.

Fleming teaches the substitution of a flexible polymeric multilayer reflector for that of a reflector comprised of alternating layers of TiO_2 and SiO_2 (column 2, lines 5-8; column 6, lines 21-39; column 8, lines 1-6).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the reflector of Fleming for that of Miller to reduce the cost of the reflector when higher refractive indices are unnecessary.

Further with respect to Claim 1, Schrenk discloses the use of a flexible multilayer reflector comprising polymeric material that resists degradation when exposed to ultraviolet light within a light device (column 2, lines 62-66).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the multilayer reflector of Schrenk in the device taught by Miller and Fleming to maximize the life of the reflector thereby maximizing the life of the device.

With respect to claim 2: Fleming discloses the flexible multilayer reflector comprising polymeric material (column 5, line 17).

With respect to claims 5 and 6: Miller discloses the use of a Gallium Nitride (GaN) die (column 5, lines 14-15). Miller further discloses that the GaN die is configured to emit primary light having a peak wavelength in the blue region. The Examiner notes that while Miller only addresses the peak wavelength emitted by the die, other wavelengths are also present, particularly UV rays. Therefore, Miller discloses excitation light comprising blue and UV light.

With respect to claim 9: Fleming discloses the first flexible multilayer reflector is a polymeric material substantially free of inorganic materials (column 7, lines 38-45).

With respect to claim 10: Miller discloses, in figures 2 and 3 and throughout the disclosure, the first multilayer reflector disposed between the LED (12) and the layer of phosphor material (36).

With respect to claim 11: Miller discloses the first multilayer reflector reflects visible light and transmits UV light or blue light (column 6, lines 17-18; column 6 line 42).

With respect to claim 14: Miller discloses, in figures 2 and 3 and throughout the disclosure, the layer of phosphor (36) is coated on the first multilayer reflector (32,34).

Claims 3, 7, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller and Fleming.

With respect to claims 3, 7, and 15: Miller discloses, in figures 2 and 3 and throughout the disclosure, a light source comprising: an LED (12) that emits excitation light; a first multilayer reflector (32,34) that reflects at least a portion of visible light and transmits the excitation light (column 6, lines 17-18; column 6, line 42); and a layer of phosphor material (36) adjacent the multilayer reflector, the phosphor material emitting visible light when illuminated with excitation light. Miller further discloses the multilayer reflector to be a DBR mirror comprised of alternating layers of TiO_2 and SiO_2.

However, Miller fails to teach or fairly suggest the multilayer reflector being flexible, and that the layer of phosphor material further comprises an adhesive to attach the phosphor layer to the multilayer film.

Fleming teaches the substitution of a flexible polymeric multilayer reflector for that of a reflector comprised of alternating layers of TiO_2 and SiO_2 (column 2, lines 5-8; column 6, lines 21-39; column 8, lines 1-6).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the reflector of Fleming for that of Miller to reduce the cost of the reflector when higher refractive indices are unnecessary.

Further with respect to Claims 3, 7, and 15, one of ordinary skill in the art would recognize that a phosphor material comprising an adhesive, a phosphor material comprising a binder and an adhesive disposed between the phosphor material and the first reflector are obvious variations of attaching the phosphor layer to the first multilayer film.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ a phosphor material comprising an adhesive, a phosphor material comprising a binder or an adhesive disposed between the phosphor material and the first reflector because it allows for secure attachment of the phosphor layer to the multilayer reflector while not impeding the phosphor material from converting emission wavelengths into visible wavelengths.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miller, Fleming, and Schrenk, as applied to claim 1 above, and further in view of Weber et al. ("Giant Birefringent Optics in Multilayer Polymer Mirrors" hereinafter Weber).

Miller and Fleming teach most of the elements of the claimed invention, including a first and second thermoplastic polymer.

However, they fail to teach or fairly suggest at least some of the layers are birefringent.

Weber discloses the use of birefringent layers within a multilayer polymer mirror.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to include birefringent layers within the device of Miller and Fleming

because the birefringent layers increase the reflectivity of the reflector while the incident angle increases thereby minimizing the amount of excitation light that is reflected back into the device.

Claims 1, 2, 5, 6, 7, 8, 10, 11, 12, 13, 16, 17, 18, 19, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vriens et al. (US Patent 5,813,753; hereinafter Vriens) in view of Fleming and Schrenk.

With respect to claims 1 and 8: Vriens discloses, in figures 3 and 4 and throughout the disclosure, a light source comprising: an LED (41) that emits excitation light; a first multilayer reflector (37;47) that reflects at least a portion of visible light and transmits the excitation light (column 5, lines 6-7; column 5, lines 51-53); and a layer of phosphor material (phosphor grains) adjacent the multilayer reflector, the phosphor material emitting visible light when illuminated with excitation light.

Vriens further discloses the multilayer reflector comprised of alternating layers of high and low refractive material.

However, Vriens fails to teach or fairly suggest the multilayer reflector being flexible and resistant to degradation by blue, violet, or ultraviolet light.

Fleming teaches the substitution of a flexible polymeric multilayer reflector for that of a reflector comprised of alternating layers of high and low refractive material (column 2, lines 5-8; column 6, lines 21-39; column 8, lines 1-6).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the reflector of Fleming for that of Vriens because it reduces the cost of the reflector when higher refractive indices are unnecessary.

Further with respect to Claims 1 and 8, Schrenk discloses the use of a flexible multilayer reflector comprising polymeric material that resists degradation when exposed to ultraviolet light within a light device (column 2, lines 62-66).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the multilayer reflector of Schrenk in the device taught by Vriens and Fleming to maximize the life of the reflector thereby maximizing the life of the device.

With respect to claim 2: Fleming discloses the flexible multilayer reflector comprising polymeric material (column 5, line 17).

With respect to claims 5 and 6: Vriens discloses the excitation light to comprise UV/blue light (column 3, line 19).

With respect to claim 7: Vriens discloses the phosphor material further comprising a binder material (35;45).

With respect to claim 10: Vriens discloses, in figure 4 and throughout the disclosure, the first multilayer reflector (47) disposed between the LED (41) and the layer of phosphor material (44).

With respect to claim 11: Vriens discloses the first multilayer reflector reflects visible light and transmits UV light or blue light (column 5, lines 6-8).

With respect to claim 12: Vriens discloses, in figure 3 and throughout the disclosure, the layer of phosphor material (34) disposed between the LED (31) and the first multilayer reflector (37).

With respect to claim 13: Vriens and Fleming show all the limitations as shown above.

However, they fail to teach or fairly suggest the multilayer reflector reflects yellow or red and transmits UV, blue or green light.

It is well known in the art that reflectors are tunable, meaning that the desired wavelengths reflected are dependent upon the desired output and the materials selected to manufacture the reflector to produce that output.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute a reflector that reflects yellow or red for the reflector of Vriens and Fleming because it would allow for better conversion of emission light into visible light thereby reducing the amount of phosphor necessary in the device.

With respect to claim 16: Vriens discloses, in figures 3 and 4 and throughout the disclosure, the layer of phosphor material (phosphor grains) is a discontinuous layer of phosphor material.

With respect to claim 17: Vriens discloses, in figures 3 and 4 and throughout the disclosure, the layer of phosphor material is a plurality of dots of phosphor material (34;44).

With respect to claim 18: Vriens and Fleming show all the limitations as shown above. Vriens further discusses the importance of the size of the phosphor grain that is selected (column 3, lines 35-37).

However, Vriens and Fleming fail to teach or fairly suggest each dot having an area of less than 10,000μm^2.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute a phosphor dot having an area of less than 10,000μm^2 within the device disclosed by Vriens and Fleming because it maximizes the conversion of UV/blue light into visible light using a minimum amount of phosphor.

With respect to claim 19: Vriens discloses the plurality of dots comprise phosphor material that emits red, green and blue light when illuminated with excitation light (column 3, lines 52-56).

With respect to claim 26: Vriens discloses at least a first phosphor dot emitting light at a first wavelength and a second phosphor dot emitting light at a second wavelength different than the first wavelength (column 3, lines 54-55).

Claims 1, 8, 20, 21, 22, 23, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vriens (US Patent 4,882,617) in view of Vriens '753, Fleming, and Schrenk.

With respect to claims 1, 8, and 20: Vriens '617 discloses, in figures 5, 6 and 8, discloses a light source, comprising: a source (2) that emits UV radiation (column 8, line 30); a first multilayer reflector (22) that reflects at least a portion of visible light and

transmits the UV light (column 5, line 68-column 6, line 2); a layer of phosphor material (18) adjacent the first multilayer reflector, the phosphor material emitting visible light when illuminated with the UV radiation; and a multilayer interference reflector (23), wherein the layer of phosphor material is disposed between the first flexible multilayer reflector and the multilayer interference reflector.

However, Vriens '617 fails to teach or fairly suggest the source that produces the UV radiation to be an LED.

Vriens '753 discloses a UV radiation source to be an LED (41).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the LED for the UV source of Vriens '617 because it reduces the size of the device while still producing UV radiation.

Vriens '617 further discloses the first multilayer reflector comprised of alternating layers of TiO_2 and SiO_2 (column 7, lines 37 and 41).

However, Vriens '617 fails to teach or fairly suggest the first multilayer reflector being flexible and resistant to degradation by blue violet or ultraviolet light.

Fleming teaches the substitution of a flexible polymeric multilayer reflector for that of a reflector comprised of alternating layers of high and low refractive material (column 2, lines 5-8; column 6, lines 21-39; column 8, lines 1-6).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the reflector of Fleming for that of Vriens '617 and '753 because it reduces the cost of the reflector when higher refractive indices are unnecessary.

Further with respect to Claims 1, 8, and 20, Schrenk discloses the use of a flexible multilayer reflector comprising polymeric material that resists degradation when exposed to ultraviolet light within a light device (column 2, lines 62-66).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the multilayer reflector of Schrenk in the device taught by Vriens '617 and '753 and Fleming to maximize the life of the reflector thereby maximizing the life of the device.

With respect to claim 21: Vriens '617 discloses the interference reflector reflects the excitation light onto the phosphor material and transmits the visible light (column 6, lines 8-13).

With respect to claim 22: Vriens '617 and '753 and Fleming show all the limitations as shown above.

However, they fail to teach or fairly suggest the multilayer reflector reflects yellow or red and transmits UV, blue or green light.

It is well known in the art that reflectors are tunable, meaning that the desired wavelengths reflected are dependent upon the desired output and the materials selected to manufacture the reflector to produce that output.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute a reflector that reflects yellow or red for the reflector of Vriens and Fleming because it would allow for better conversion of emission light into visible light thereby reducing the amount of phosphor necessary in the device.

With respect to claim 24: Fleming discloses the first flexible multilayer reflector is a polymeric material substantially free of inorganic materials (column 7, lines 38-45).

With respect to Claim 25: Schrenk discloses the layers are birefringent (Column 6, Lines 43-45).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to include birefringent layers within the device of Vriens '617 and '753 and Fleming because the birefringent layers increase the reflectivity of the reflector while the incident angle increases thereby minimizing the amount of excitation light that is reflected back into the device.

Response to Arguments

Applicant's arguments with respect to Claims 1-26 have been considered but are moot in view of the new ground(s) of rejection.

With respect to the Obviousness-Type Double Patenting Rejection over Application No. 10/726968 (hereinafter '968), the Applicant asserts that the present application is broader than the '968 application, as Claim 1 of '968 requires a "non-planar" reflector wherein Claim 1 of the present application does not. Examiner respectfully disagrees.

Claim 1 of the present application requires that the reflector be "flexible," which implies that the reflector would be in non-planar conformations, and, indeed, the disclosure of the present application is drawn towards a reflector that flexibly conforms to the layer beneath it.

Applicant asserts that Claim 1 of the present application is also narrower than Claim 1 of the '968 application, as Claim 1 of the present application requires a layer of phosphor material that is "adjacent" the multilayer reflector, but Claim 1 of '968 does not. Examiner respectfully disagrees.

Claim 1 of the present invention does require a layer of phosphor material to be "adjacent" the multilayer reflector, but, as defined in Applicant's disclosure, "adjacent" designates that, "items can be touching, or spaced away from each other with one or more materials disposed between the adjacent items" (Lines 27-29, Page 18), whereby Claim 1 of '968 implies that phosphor material is adjacent the multilayer reflector in Lines 6-7: "reflector being positioned between the LED and the layer of phosphor material."

Applicant asserts that there is not support for Examiner's statement that "[I]t is well within ordinary skill in the art for an adhesive to contain phosphor material in order to deposit the material in layer form." Examiner respectfully disagrees.

Prior art cited in the previous office action teaches several types of adhesive materials used in conjunction with phosphor material: e.g. Miller (USP# 6,155,699) teaches an epoxy deposited over the phosphor material to form a lens assembly for the LED device (Column 4, Lines 42-45), Schrenk (USP# 5,540,978) teaches an adhesive layer used to join two polymer layers in a thin film device for use with LED (Column 7, Lines 62-64), and Vriens et al. (USP# 5,813,753) teach an epoxy material used to contain phosphor more efficiently in an LED device (Column 3, Lines 31-50). Examiner

notes that the use of adhesives in thin film optic devices is known in many arts, including that of the present invention.

With respect to the Obviousness-Type Double Patenting Rejection over Application No. 10/727026 (hereinafter '026), the Applicant asserts that Claim 1 and its dependent claims in the present application requires a multilayer reflector that "transmits excitation light," whereas Claims 1 and 18 of '026 require a multilayer reflector that "reflects the excitation light." Examiner respectfully disagrees.

Claim 18 of the '026 patent requires a multilayer reflector that "reflects visible light and transmits the excitation light," as is required by Claim 1 of the present application.

Applicant asserts that there is not support for Examiner's statement that "[I]t is well within ordinary skill in the art for an adhesive to contain phosphor material in order to deposit the material in layer form." Examiner respectfully disagrees.

Prior art cited in the previous office action teaches several types of adhesive materials used in conjunction with phosphor material: e.g. Miller (USP# 6,155,699) teaches an epoxy deposited over the phosphor material to form a lens assembly for the LED device (Column 4, Lines 42-45), Schrenk (USP# 5,540,978) teaches an adhesive layer used to join two polymer layers in a thin film device for use with LED (Column 7, Lines 62-64), and Vriens et al. (USP# 5,813,753) teach an epoxy material used to contain phosphor more efficiently in an LED device (Column 3, Lines 31-50). Examiner

notes that the use of adhesives in thin film optic devices is known in many arts, including that of the present invention.

With respect to the Obviousness-Type Double Patenting Rejection over Application No. 10/727072 (hereinafter '072), the Applicant asserts that the present application is broader than the '072 application, as Claim 1 of '072 requires a "non-planar" reflector wherein Claim 1 of the present application does not. Examiner respectfully disagrees.

Claim 1 of the present application requires that the reflector be "flexible," which implies that the reflector would be in non-planar conformations, and, indeed, the disclosure of the present application is drawn towards a reflector that flexibly conforms to the layer beneath it.

Applicant asserts that Claim 1 of the present application is also narrower than Claim 1 of the '072 application, as Claim 1 of the present application requires a layer of phosphor material that is "adjacent" the multilayer reflector, but Claim 1 of '072 does not. Examiner respectfully disagrees.

Claim 1 of the present invention does require a layer of phosphor material to be "adjacent" the multilayer reflector, but, as defined in Applicant's disclosure, "adjacent" designates that, "items can be touching, or spaced away from each other with one or more materials disposed between the adjacent items" (Lines 27-29, Page 18), whereby Claim 1 of '072 implies that phosphor material is adjacent the multilayer reflector in

Lines 6-7: "reflector being positioned between the LED and the layer of phosphor material."

Applicant asserts that there is not support for Examiner's statement that "[I]t is well within ordinary skill in the art for an adhesive to contain phosphor material in order to deposit the material in layer form." Examiner respectfully disagrees.

Prior art cited in the previous office action teaches several types of adhesive materials used in conjunction with phosphor material: e.g. Miller (USP# 6,155,699) teaches an epoxy deposited over the phosphor material to form a lens assembly for the LED device (Column 4, Lines 42-45), Schrenk (USP# 5,540,978) teaches an adhesive layer used to join two polymer layers in a thin film device for use with LED (Column 7, Lines 62-64), and Vriens et al. (USP# 5,813,753) teach an epoxy material used to contain phosphor more efficiently in an LED device (Column 3, Lines 31-50). Examiner notes that the use of adhesives in thin film optic devices is known in many arts, including that of the present invention.

With respect to the 35 USC 103(a) rejections of Claims 1 and 8, Applicant asserts that the reflector of Schrenk would render the device of Miller inoperable since the secondary (blue) primary light of Miller would not be reflected by the "substantially transparent" ultraviolet reflecting film of Schrenk. Examiner respectfully disagrees.

The Claim requires that the reflector reflect "at least a portion of visible light," whereas the reflector of Schrenk has a 50% transmission of wavelengths between 300-about 400 nm, which would include some wavelengths of blue light, the remainder being

reflected (Abstract and Column 3, Lines 26-36). Additionally, Schrenk discloses the reflector as being "substantially" transparent to visible light in the range of about 400-800 nm (Column 3, Lines 51-56), wherein this would fulfill the claim requirement that "at least a portion" of visible light is reflected. Finally, as Schrenk teaches that it is a matter of layer thickness to adjust the wavelength range of light reflected by the device (Column 6, Lines 22-42), it would have been obvious to one of ordinary skill in the art to make a minor adjustment to reflect any wavelength of light desired for the application at hand in the invention of Miller et al., and Applicant admits that Schrenk teaches a material that is resistant to degradation by ultraviolet light (Applicant remarks, Page 14, Lines 5-8).

With respect to the 35 USC 103(a) rejections of Claims 2, 4-7, 9-11, 13, 14, and 16-26, Applicant asserts that Miller does not teach a flexible reflector and that the prior office action has inconsistencies in its citations. Examiner respectfully disagrees.

The flexibility of the multilayer reflector is provided by Fleming, as stated in the prior rejection of Claim 1, and this reflector is what is referred to in the dependent claims, called a "first flexible multilayer reflector," for consistency and having been established as a combination of the devices of Miller and Fleming in independent Claim 1. The rejections have been clarified accordingly.

Applicant asserts that Vriens ('753) does not disclose a discontinuous layer of phosphor material in accordance with the definition of the Applicant claims of the present invention listed in the Applicant's specification. Examiner respectfully disagrees.

The Applicant's specification on Page 19, Lines 6-25, teaches that a plurality of dots of phosphor material comprises a discontinuous layer of phosphor material, and that said dots can, "be arranged and configured in any uniform or non-uniform manner as desired." Vriens ('753) teaches such a plurality of discontinuous dots of phosphor material distributed throughout an epoxy (Figure 2-4) to reduce processing steps in manufacturing (Column 3, Lines 44-51).

With respect to the 35 USC 103(a) rejections of Claims 3 and 15, Applicant asserts that there is not support for Examiner's statement that, "It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ a phosphor material comprising an adhesive, a phosphor material comprising a binder or an adhesive disposed between the phosphor material and the first reflector because it allows for secure attachment of the phosphor layer to the multilayer reflector while not impeding the phosphor material from converting emission wavelengths into visible wavelengths," as the present record fails to show the use of adhesives in LED-excited phosphor-based light sources. Examiner respectfully disagrees.

Prior art cited in the previous office action teaches several types of adhesive materials used in conjunction with phosphor material: e.g. Miller (USP# 6,155,699) teaches an epoxy deposited over the phosphor material to form a lens assembly for the LED device (Column 4, Lines 42-45), Schrenk (USP# 5,540,978) teaches an adhesive layer used to join two polymer layers in a thin film device for use with LED (Column 7, Lines 62-64), and Vriens et al. (USP# 5,813,753) teach an epoxy material used to

contain phosphor more efficiently in an LED device (Column 3, Lines 31-50). Examiner notes that the use of adhesives in thin film optic devices is known in many arts, including that of the present invention.

For the reasons above, the rejections of the Claims 1-26 are being maintained.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: U.S. Patent to Jonza et al. (USP# 5,882,774) and U.S. Patent Application Publication to Hebrink et al. (PGPUB# 2001/0019182) regarding birefringent, polymeric, multilayer, optical thin film devices.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anastasia Midkiff whose telephone number is 571-272-5053. The examiner can normally be reached on M-F 7-4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Glick can be reached on 571-272-2490. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ASM
5/8/06

EDWARD J. GLICK
SUPERVISORY PATENT EXAMINER